AEHF

Advanced Extremely High Frequency (AEHF) Satellite

Mission

Provide worldwide, secure, survivable satellite communications to support strategic and tactical forces of the U.S. and its international partners during all levels of conflict. The Advanced Extremely High Frequency (AEHF) system will replenish and improve on the capabilities of the Milstar system. AEHF will sustain the MILSATCOM architecture by providing connectivity across the spectrum of mission areas, including land, air, and naval warfare; special operations; strategic nuclear operations; strategic defense; theater missile defense; and space operations and intelligence.

Description

AEHF will consist of a Space Segment, a Mission Control Segment, and a Terminal Segment, that will provide processed communications in a specified set of data rates from 75 bps to approximately 8 Mbps. System uplinks and crosslinks will operate at extremely high frequency (EHF), and downlinks at super high frequency (SHF). The system will serve a Terminal Segment comprised of terminals used by all the Services and international partners, including the Family of Advanced Beyond Line-of-Sight terminals (FAB-T). The AEHF satellites will respond directly to Service requests from user terminals, providing point-to-point connectivity and network services on a priority basis.

On-board signal processing will provide protection and ensure optimum resource utilization and system flexibility among the Military Services and other users who operate terminals on land, sea, and air. The AEHF system will be backward compatible with the low data rate (LDR) and medium data rate (MDR) capabilities of legacy Milstar satellites and terminals, while providing extended data rates (XDR) and other improved functionality at substantially less cost than the previous system. Each satellite will be launched with the Evolved Expendable Launch Vehicle (EELV); the initial launch is planned for 2006.

The AEHF Satellite Communications System will augment the Milstar constellation and improve DoD EHF capability. The AEHF program is currently in the System Development and Demonstration/ Production acquisition phase. The MILSATCOM Joint Program Office is responsible for development, acquisition and sustainment of the AEHF program.

General Characteristics

Primary function:	Worldwide, secure, survivable satellite communications
Primary contractor:	Lockheed Martin Satellite Systems
Satellite Bus:	A2100 line
Weight:	Approximately 13,100 lbs at launch, 9,000 lbs on-orbit
Orbit altitude:	22,300 miles (geostationary)
Payload:	Onboard signal processing, crossbanded EHF/SHF communications
Antennas:	6 Gimbaled Dishes, 1 EHF and 2 SHF Phased Arrays, 2 Earth Coverage Horns, 2 Crosslinks
Capability:	Data rates from 75 bps to approximately 8 Mbps
Launch vehicle:	Delta IV and Atlas V EELVs
Inventory:	2 satellites ordered, possible 3 additional
Unit Cost:	Approximately $400 million per satellite

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